From: Draper, Cynthia E
To: jkern@kernstat.com
Cc: Saric, James; Bondy, Garret E; Paul Bucholtz; King, Todd W.; Fortenberry, Chase; Griffith, Garry T.; Curtis, Emmet F
Subject: RE: Post discussion evaluation of Fish trend decay rates
Date: Monday, October 28, 2013 9:54:56 AM

John

Thanks for the homework and discussion. We agree with the upper and lower bounds presentation. We see this as an adjustment to what was provided in the revised draft FS. The draft revised FS provided an upper and lower range of the years to reach a goal around a reasonable rate of decline (2% for MNR) based on the fish trends. The upper and lower bounds corresponded to the min (0% for MNR) and max (7.7%) based on the fish trend data. The range (in years) was reported in the main text and the method of getting to this range was provided in an appendix. We also see these upper and lower bounds as unlikely and not equal to a best case value.

Your suggestions follow that intention and we can revise the rates accordingly with an explanation in the FS text.

Let's discuss the number of cases suggested to be sure we are on the same page. We have for each alternative (S-2 through S-5)

- 3 fish types (SMB fillet, SMB YOU whole body, and Carp fillet),
- upper and lower bounds with best-case for the decay rate, and
- three possibilities for the step down rate in S-3, S-4, and S-5.

I would like to have a Work Group conference call on Thursday November 14th at 3:00 pm to finalize the procedure and have it ready to present to EPA and MDEQ the week of Nov 18th. I understand you are available as is AMEC and GP. Look for the invite from Joe Abid.

Thanks

Cynthia

From: John Kern [mailto:kernstat@gmail.com] **On Behalf Of** John Kern
Sent: Friday, October 25, 2013 2:52 PM
To: Draper, Cynthia E; Curtis, Emmet F
Cc: saric.james@epa.gov; Bondy, Garret E; Paul Bucholtz; King, Todd W.
Subject: Post discussion evaluation of Fish trend decay rates

Cynthia and Emmet,

Thanks for the discussion yesterday. After our call I did a little more homework and I think we may want to revise the range of decay rates slightly and also may be able to thin down the number of combinations necessary. The attached is a rough look at this question and where I am ending up after getting a little more up to speed on the trend estimates in the FS etc.

The punchline is a small change in the range of decay rates I think are well supported with a best estimate of about 2% and uncertainty bounds ranging from (UCL95=no decay to 5.3%). Note I'm suggesting using UCLs rather than "scenarios" because the added information related to probability is important in helping people to understand our weight of evidence for each value.

In particular, we are saying that we are very confident that there will be decay in concentrations—95% sure it will be greater than 0%. The no decay scenario is very unlikely and should not be considered equally with the 2% decay rate which is our most likely scenario.

Similarly, the 5.3% decay scenario or faster is also highly unlikely given our understanding of the data, and again should not be considered equally with our best case number of 2% or so.

My basis for these ranges of values are in the attached memo. Also I suggest limiting the number of cases to just three cases based on our best estimate of 2% decay considered for the three candidate step-downs we discussed. The range of outcomes for each of the three cases should be communicated as confidence bounds, so that for a value like time to clean there are 3 rows in the table containing best estimate and two additional columns indicating the LCL and UCL each of which are possible but much less likely as discussed above. I think communicating these bounds as equally likely scenarios is a mistake and also resulting in cumbersome presentation of many combinations in the report.

So, see the attached and I'm open to discussion as usual. I understand that there is more than one way to do this.

John

Note: I have cc'd a modest group I expect will be interested, but am not intending to elevate the question.